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More Facts Fill in Picture of Russian 'Spies in Sky'

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AMERICAN-SOVIET RELATIONS are marked by deep antagonisms and mutual distrust leavened by a necessity for self-restraint in an age of instant nuclear holocaust.

A major instrument in producing that self-restraint in Moscow and Washington is a remarkable product of the space-science age now being fully employed by the two superpowers: the observation or reconnaissance satellite commonly called the "spy in the sky."

These satellites, allowed to operate by tacit consent, provide continual photographic inspection of each superpower by the other. This inspection is an indispensable element in the system of mutual deterrence on which the nuclear peace is founded.

Thus the spy satellites have much to do with the stability in American-Soviet relationships despite the war in Vietnam, the ideological gulf and the nation-state rivalries between the two on every continent.

Whole World in Focus

THESE SATELLITES, whirling around the globe with cameras pointed down at areas of military sensitivity, enable Moscow and Washington to know with an incredible degree of certainty the nature of each other's weaponry and its deployment.

This constantly updated order of battle, the basic tool in military decision-making, is of course provided for the superpowers not only about each other. Each can follow the Chinese armies, checking constantly, for example, for movement of troop trains south toward the Vietnamese border and a possible intervention. Or they can check on Castro's Cuba or the rivals in the Middle East and on the Indian subcontinent.

The sky spies cannot read intent in the minds of the men in the Kremlin or the White House. But they produce for those leaders a mass of information on which to base military and political policy.

The Washington Post on Dec. 8, 1963, first laid out in detail the American program which had begun in 1961 under the name Samos. Now some new information has become available on the Soviet program which turns out to be remarkably similar.

An Authoritative Source

THIS DATA is contained in a report on the Soviet space program just published by the House Science and Astronautics Committee and written by Dr. Charles S. Sheldon II.

Dr. Sheldon's credentials are impeccable. His tongue-twisting title is acting chief of the science policy research division and senior specialist in space and transportation technology for the Legislative Reference Service of the Library of Congress. Most important, he has the maximum security clearances and his report, as the study states, "has been reviewed by appropriate individuals in more than one institution of Government in the interest of accuracy and security."

What Sheldon presents, then, is based on unclassified, open sources in the Soviet Union, the United States and Britain, vetted by the most responsible secret sources. A great deal that is known in Washington thus is left unsaid, but what is said fits with most classified accounts.

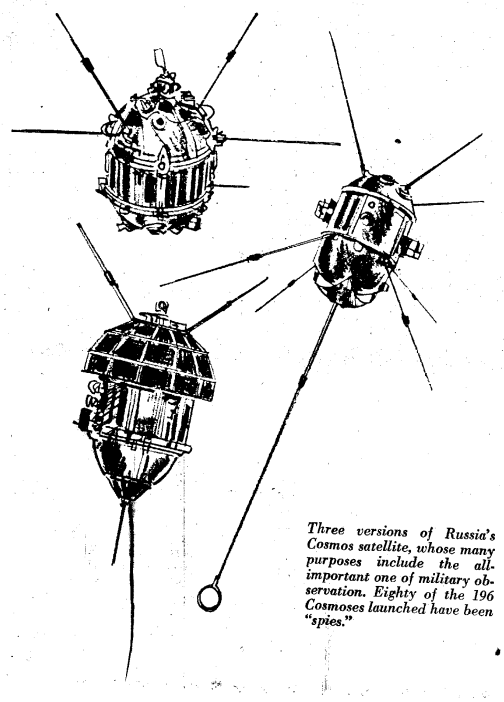
8-10 Days Aloft

THE SOVIET spy satellite program is part of what Moscow calls the Cosmos series of space shots which began on March 16, 1962. Last Tuesday, Moscow announced the launching of Cosmos No. 196. The observation satellite program began with Cosmos No. 4 on April 26, 1962.

Cosmos is a general label which covers many satellite purposes. But as Sheldon notes, the "inherent nature of these flights" reveals which are for observation purposes. This can be deduced within a few days of each launch by study of launch site, hour of launch, stay time in orbit and orbital path.

The Cosmos photo satellites use the Vostok space vehicle also used for manned flight, a 5000-pound capsule. The entire vehicle is brought down on land.

Sheldon's study shows that the Soviet Union launched five spy satellites in 1962, seven in 1963, 11 in 1964, 17 in 1965, 21 in 1966 and 19 this year through Nov. 5. Early versions stayed up three or four days but the current pattern is eight days and occasionally ten.



Three versions of Russia's Cosmos satellite, whose many purposes include the all-important one of military observation. Eighty of the 196 Cosmoses launched have been "spies."

As Sheldon cautiously puts it, "because almost all of these flights are launched between 8 and 12 in the morning, Greenwich time, this may coincide with good lighting conditions over many possible targets of observation as well as working out well for daylight recovery in the normal zones in Kazakhstan or the Ukraine."

'See' All of Alaska

BEGINNING MARCH 17, 1966, at the new launch site at Plesetsk, the Soviets launched eight-day-life satellites at about a 72-degree inclination "which would reach up far enough to cover airfields of northern Norway, installations in all of Alaska and give at least a slant look at Thule, Greenland." Other orbits cover areas farther south around the globe.

It is known, too, that the Cosmos satellites fly at an altitude of 120 or 125 miles compared to 75 or 80 for the American Samos. While Sheldon gives no comparable frequency figures for Samos satellites, it appears that they have been roughly comparable in number and stay up for from five days to a couple of weeks.

Whereas the Soviet film capsules are recovered within the Soviet Union on landing, the American capsules (which weigh 200 to 300 pounds) are caught by nets carried by aircraft flying over the Pacific from Hawaii. There are very few American misses and those that do plunge into the sea contain a self-destruction mechanism.

The American spy program employs both black and white and color photography and it is assumed that the Soviets do the same. Television techniques have been experimented with but are not considered necessary.

Cautious Boasts

AS TO THE EFFICACY of these rival spies in the sky, both sides have done some boasting though neither has formally said that it is involved in such an intelligence venture. Nikita Khrushchev used to boast to foreigners about "my pictures" and President Johnson declared last March that because of spies in the sky "we know how many missiles the enemy has." Earlier, President Kennedy had said that "the camera, I think, is actually going to be our best inspector" of what the Soviet Union is up to.

Picture-taking is supplemented by various "ferreting" devices. Some of the Cosmos satellites pick up telltale electronic signals and radio conversation.

Neither side has made public a satellite photo. But those who have seen them say the American photos are incredible, with details visible down to items the width of a garden hose. It is assumed that the Soviet developments in photography are comparable.

A Frightening Story

SHELDON DRAWS no such conclusions, of course. He simply relates the public facts among a mass of other equally fascinating material about other facets of the Soviet space program. He does tell one frightening tale worth recounting here.

On Oct. 24, 1962, the day the American blockade of Soviet ships went into effect during the Cuban missile crisis, the Soviets launched a spacecraft in what Sheldon says was an attempt to send a vehicle to Venus. The vehicle, however, "broke into many pieces, and this cloud of debris came toward Alaska within range of the BMEWS radar defense, which saw what might for a moment have looked like a mass ICBM attack. The computer must have quickly revealed it was not, but the potentialities for misunderstanding were there."

It is to provide a continuing background of solid military information about the other side, and thus to avoid panic judgments at such a spine-chilling moment, that the rival spy-in-the-sky satellite programs exist.